

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1-14: (canceled).

Claim 15 (new): A bearing for a wheel comprising:

a fixed ring,

a rotating ring,

a plurality of rolling members rollably arranged in a circumferential direction between the fixed ring and the rotating ring, and

a magnetic encoder, wherein

the magnetic encoder comprises a magnet portion substantially in a circular ring shape magnetized in multipoles in a circumferential direction and a fixed member, and

the magnet portion is bonded to the fixed member and includes a magnetic member and a thermoplastic resin.

Claim 16 (new): The bearing according to Claim 15, wherein the thermoplastic resin is polyamide based resin or polyphenylene sulfide (PPS).

Claim 17 (new): The bearing according to Claim 16, wherein the thermoplastic resin is polyamide 6, polyamide 12, polyamide 612 or polyamide 11.

Claim 18 (new): The bearing according to Claim 17, wherein the thermoplastic resin contains a silane coupling agent or an oxidization preventing agent.

Claim 19 (new): The bearing according to Claim 16, wherein the thermoplastic resin is polyamide 12, polyamide 612, polyamide 11 or polyphenylene sulfide (PPS).

Claim 20 (new): The bearing according to Claim 15, wherein a flexural deflection at 23 C° of the magnet portion (thickness $t = 3.0$ mm, ASTM D790; span distance of 50 mm) is within a range of 2 to 10 mm.

Claim 21 (new): The bearing according to Claim 20, wherein the thermoplastic resin includes a thermoplastic resin at least having a soft segment in a molecule.

Claim 22 (new): The bearing according to Claim 20, wherein a plasticizer is included by about 0.1 through 4 weight % in total weight.

Claim 23 (new): The bearing according to Claim 15, wherein the magnet portion includes at least ferrite as the magnetic member, and the magnetic member includes 60 through 80 volume % of a magnet portion.

Claim 24 (new): The bearing according to claim 23, wherein the magnetic member of the magnet portion is an anisotropic magnet which is orientated by a magnetic field.

Claim 25 (new): The bearing according to Claim 23, wherein the magnetic property of the magnet portion is in a range of 1.3 through 15 MGOe as a maximum energy product (BH_{max}).

Claim 26 (new): The bearing according to Claim 25, wherein the magnetic property of the magnet portion is in a range of 1.63 through 2.38 MGOe as a maximum energy product (BH_{max}).

Claim 27 (new): The bearing according to Claim 26., wherein a flexural deflection at 23 C° of the magnet portion (thickness $t = 3.0$ mm, ASTM D790; span distance of 50 mm) is in a range of 2 through 10 mm.

Claim 28 (new): The bearing according to Claim 23, wherein a number of poles of the magnet portion is about 70 through 130 poles, and a single pitch error is equal to or smaller than ± 2 %.

Claim 29 (new): The bearing according to Claim 15, wherein the magnet portion and the fixed member are bonded by said phenolic resin based adhering agent.

Claim 30 (new): The hearing according to Claim 29, wherein the magnet portion is formed by insert molding, and

the phenolic resin based adhering agent is progressed to be subject to curling reaction in insert molding of the magnet portion.

Claim 31 (new): The bearing according to Claim 15, wherein the magnet portion and the fixed member are bonded by said epoxy resin based adhering agent.

Claim 32 (new): The bearing according to Claim 31 wherein the magnet portion is formed by insert molding, and the epoxy resin based adhering agent is progressed to be subject to curling reaction in insert molding of the magnet portion.

Claim 33 (new): The bearing according to Claim 30, wherein the bending elastic modulus or Young's modulus of the phenolic resin based adhering agent or, the epoxy resin based adhering agent is in a range of 0.02 through 5 GPa, or a hardness (durometer D scale: HDD) is in a range of 40 through 90.

Claim 34 (new): The bearing according to Claim 33, wherein the bonding surface of the fixed member has 0.2 through 2.0 μm by an arithmetic mean height R_a and about 1.5 through 10 μm by a maximum height R_z .

Claim 35 (new): The bearing according to Claim 15, wherein the magnet portion pinches a flange portion of the fixed member so that the magnet portion and the fixed member are mechanically bonded.

Claim 36 (new): The bearing according to Claim 35, wherein the bonding surface of the fixed member has 0.2 through 2.0 μm by an arithmetic mean height Ra and about 1.5 through 10 μm by a maximum height Rz.

Claim 37 (new): The bearing according to Claim 35, wherein said phenolic resin based adhering agent or said epoxy resin based adhering agent are used together.

Claim 38 (new): The bearing according to Claim 15, wherein
a notched portion is provided on an outer circumference of a flange portion of the fixed member, and
the magnet portion and the fixed member are mechanically bonded by the notched portion.

Claim 39 (new): The bearing according to Claim 38, wherein the bonding surface of the fixed member has 0.2 through 2.0 μm by an arithmetic mean height Ra and about 1.5 through 10 μm by a maximum height Rz.

Claim 40 (new): The bearing according to Claim 38, wherein said phenolic resin based adhering agent or said epoxy resin based adhering agent are used together.

Claim 41 (new): The bearing according to Claim 15, wherein the fixed member includes a plurality of members, and is mechanically bonded to the magnet portion.

Claim 42 (new): A method for manufacturing a bearing for a wheel, the bearing comprising a magnetic encoder which includes a magnet portion and a fixed member, the magnet portion containing a magnetic member and a thermoplastic resin, the method comprising the follow step:

forming the magnet portion by injection molding in the state of applying a magnetic field.

Claim 43 (new): The method according to Claim 42, further comprising the following step:

forming the magnet portion by injection molding in the state of applying the magnetic field in the thickness direction thereof.

Claim 44 (new): A method for manufacturing a bearing for a wheel, the bearing comprising a magnetic encoder which includes a magnet portion and a fixed member, the magnet portion containing a magnetic member and a thermoplastic resin, the method comprising the following step:

forming the magnet portion by insert molding in a state that the fixed member baked with an adhering agent at the surface in the semicured state is a core.

Claim 45 (new): The method according to Claim 44, wherein a phenolic resin based adhering agent or an epoxy resin based adhering agent are used as the adhering agent.

Claim 46 (new): A method for manufacturing a bearing for a wheel, the bearing comprising a magnetic encoder which includes a magnet portion and a fixed member, the magnet portion containing a magnetic member and a thermoplastic resin, the method comprising the following step:

forming the magnet portion using a disk gate type injection molding.

Claim 47 (new): The method according to Claim 46, further comprising the following step:

forming the magnet portion in a state of applying a magnetic field.

Claim 48 (new): The method according to Claim 46, further comprising the following step:

forming the magnet portion by insert molding.